

Amendments to the Claims

The listing of claims will replace the previous version, and the listing of claims:

Listing of Claims

1. (Previously presented) A fluorescent substance comprising a crystal of nitride or oxy-nitride having a  $\beta$ -type  $\text{Si}_3\text{N}_4$  crystal structure having  $\text{Eu}^{+2}$  solid-dissolved into it and emitting a fluorescent light having a peak within a range of 500nm to 600nm in wavelength by being irradiated with an excitation source.

2. (Original) A fluorescent substance according to claim 1, wherein said crystal having a  $\beta$ -type  $\text{Si}_3\text{N}_4$  crystal structure comprises a  $\beta$ -type sialon ( $\text{Si}_{6-z}\text{Al}_z\text{O}_z\text{N}_{8-z}$ , where  $0 \leq z \leq 4.2$ ).

3. (Previously presented) A fluorescent substance according to claim 2, wherein the value of said  $z$  is  $0 \leq z \leq 0.5$ .

4. (Previously presented) A fluorescent substance according to claim 1, wherein in case of representing Eu, A (where A is one, two or more kinds of elements selected from C, Si, Ge, Sn, B, Al, Ga and In) and X (where X is one or two kinds of elements selected from O and N) which are contained in said nitride or oxy-nitride crystal with a composition formula  $\text{Eu}_a\text{A}_b\text{X}_c$  (where  $a + b + c = 1$ ),  $a$ ,  $b$  and  $c$  in this formula meet the following relations (i) to (iii):

$$0.00001 \leq a \leq 0.1 \dots \dots \dots \text{(i)}$$

$$0.38 \leq b \leq 0.46 \dots \dots \dots \text{(ii)}$$

$$0.54 \leq c \leq 0.62 \dots \dots \dots \text{(iii)}$$

5. (Previously presented) A fluorescent substance according to claim 1, wherein in case of representing said nitride or oxy-

nitride crystal with a composition formula  $\text{Eu}_a\text{Si}_{b_1}\text{Al}_{b_2}\text{O}_{c_1}\text{N}_{c_2}$  (where  $a + b_1 + b_2 + c_1 + c_2 = 1$ ),  $a$ ,  $b_1$ ,  $b_2$ ,  $c_1$  and  $c_2$  in this formula meet the following relations (i) to (v):

$$0.00001 \leq a \leq 0.1 \dots \dots \dots (i)$$

$$0.28 \leq b_1 \leq 0.46 \dots \dots \dots (ii)$$

$$0.001 \leq b_2 \leq 0.3 \dots \dots \dots (iii)$$

$$0.001 \leq c_1 \leq 0.3 \dots \dots \dots (iv)$$

$$0.4 \leq c_2 \leq 0.62 \dots \dots \dots (v)$$

6. (Previously presented) A fluorescent substance according to claim 5, wherein in said composition formula  $\text{Eu}_a\text{Si}_{b_1}\text{Al}_{b_2}\text{O}_{c_1}\text{N}_{c_2}$ , the relation between  $b_1$  and  $b_2$  and the relation between  $c_1$  and  $c_2$  respectively meet the following relations:

$$0.41 \leq b_1 + b_2 \leq 0.44, \text{ and}$$

$$0.56 \leq c_1 + c_2 \leq 0.59.$$

7. (Previously presented) A fluorescent substance according to claim 1, wherein said excitation source is an ultraviolet light or a visible light of 100nm to 500nm in wavelength.

8. (Previously presented) A fluorescent substance according to claim 7, wherein said excitation source is a violet light or a blue light of 400nm to 500nm in wavelength.

9. (Previously presented) A fluorescent substance according to claim 1, wherein said excitation source is an electron beam or an X ray.

10. (Previously presented) A fluorescent substance according to claim 1, wherein said peak is within a range of 500nm to 550nm in wavelength.

11. (Previously presented) A fluorescent substance according to claim 1, wherein x and y of a value (x, y) on a CIE chromaticity coordinates of a color of light emitted at a time of being irradiated with said excitation source meet the following relations (i) and (ii):

$$0 \leq x \leq 0.3 \dots \dots \dots (i)$$

$$0.5 \leq y \leq 0.83 \dots \dots \dots (ii) .$$

12. (Previously presented) A fluorescent substance according to claim 1, wherein said nitride or oxy-nitride crystal comprises a single crystal of 50nm to 20 $\mu$ m in average grain diameter.

13. (Previously presented) A fluorescent substance according to claim 1, wherein said nitride or oxy-nitride crystal is a single crystal of 1.5 to 20 in average aspect ratio.

14. (Previously presented) A fluorescent substance according to claim 1, wherein a total of impurity elements Fe, Co and Ni contained in said nitride or oxy-nitride crystal is not more than 500ppm.

15-45. (Canceled)